

# **A HYBRID SCINTILLATOR/PHOTO SENSOR & DIRECT CONVERSION DETECTOR**

## **Abstract of Disclosure**

A hybrid scintillation/direct conversion computed tomography (CT) imaging system including: a gantry, wherein the gantry defines a patient cavity and includes an x-ray source and a radiation detection apparatus, wherein the radiation detection apparatus includes a first radiation detector and a second radiation detector and wherein the x-ray source and the radiation detection apparatus are rotatingly associated with the gantry so as to be separated by the patient cavity; a patient support structure movingly associated with the gantry so as to allow communication with the patient cavity; and a processing device, wherein the processing device is communicated with the radiation detection apparatus. In addition, a method for differentiating material characteristics using a hybrid scintillation/direct conversion imaging system including: obtaining the hybrid scintillation/direct conversion imaging system, wherein the hybrid scintillation/direct conversion imaging system includes a radiation source and a radiation detector apparatus having a first radiation detector and a second radiation detector; operating the imaging system so as to cause the radiation source to emit a radiation beam toward the radiation detector apparatus such that the first radiation detector generates first detector data and the second radiation detector generates second detector data; and processing the first detector data and the second detector data so as to generate image data. In an alternative embodiment, a medium encoded with a machine-readable computer program code for differentiating material characteristics using a hybrid scintillation/direct conversion imaging system, the medium including instructions for causing a controller to implement the aforementioned method.

## Figures